Syllabus for MATH 374 Intro to Representation Theory, Spring 2022

Instructor: Dr. Chelsea Walton

Email: notlaw@rice.edu.

Course website: https://math.rice.edu/~notlaw/teaching.html#current, which includes this Syllabus, the Teaching Schedule, and Expo. Paper Info.

Format: In-person lectures & online lectures - see the Teaching Schedule. The assessment towards your final grade will consist of weekly homework sets and one expository paper.

Lecture Days, Times, and Location: MWF 10:00AM - 10:50AM in 453 HBH.

Office Hours: M 11:00AM - 11:50AM (442 HBH, if in-person) and M 6:00 - 7:00PM (Zoom). See 'Welcome Email' for Zoom link. Instructor may leave office hours if no student arrives within the first 15 minutes of the time slot.

Prerequisite courses: Linear Algebra (MATH 221, MATH 354, or MATH 355) and MATH 356

Textbooks:

- Representations and Characters of Groups, 2nd ed, by G. James and M. Liebeck, and
- The Symmetric Group, 2nd ed, by B. Sagan.

See 'Welcome Email' for course material. The instructor's notes could be used as a primary source of material. *Note: function notation in James and Liebeck's book is not standard.*

Course Objectives: Successful students will gain experience with concepts and methods of representation theory at an introductory level, focusing on the representation theory of groups. Students will develop their skills in the written communication of mathematical ideas by completing the homework sets and by writing an expository paper. See the Teaching Schedule on the course website for more details on the topics covered in the course.

Lecture Notes: Lecture notes will be provided via Dropbox after class on the day of lecture. See 'Welcome Email' for Dropbox link.

Assessment, % of Course Grade:

- Homework, 50%
- Outline of Expository Paper, 10%
- Half Draft of Expository Paper, 15%
- Final Version of Expository Paper, 25%.

See the Teaching Schedule on the course website for assignments and due dates. Students will be responsible for keeping track of their own grades. Attendance will be taken occasionally. Along with graded assignments, the instructor will take into consideration attendance, participation in class, and growth throughout the semester for assessment needed after the end of the course (e.g., for letters of recommendation).

Homework: There will be 12 homework sets, due **by 9:30am *sharp*** on the due date. Homework solutions should be submitted through Gradescope; you will receive instructions in the Welcome Email. There will be 3-5 problems per homework set.

The lowest two homework scores will be dropped, so that each homework set is worth 5% of the course grade. There will also be a bonus homework set due at the end of the semester– the score from this set will be added to the student's total homework score as extra credit.

No late homework submissions are allowed.

Each homework score will be out of 10 points, including credit for composition. The use of full sentences, proper grammar, and overall neatness counts towards 'good composition'. See `https://math.rice.edu/~notlaw/teaching.html` for proof writing tips if needed.

Handwritten, tablet, and LaTex solution sets are all acceptable. Students are expected to write up their own solutions, and to acknowledge any references (to theorems, exercises, etc.) and collaborations with peers when pertinent.

Expository Paper: The expository paper should be composed with LaTex and should include proper references. More information about this component of the course, including LaTex templates & instructions and potential paper topics, can be found on the Expo. Paper Info page. Students may wish to seek additional resources from the Rice Program in Writing and Communication: `https://pwc.rice.edu/whom-we-serve/undergraduate-students`.

Approximate Assignment of Grades:

- 85% - 100% : grade in the A range
- 70% - 84% : grade in the B range
- 69% and below : grade in the C range or below

Academic calendar: See: `https://registrar.rice.edu/calendars/spring-semester-2022`.

Covid-19/ Illness policy: The instructor will test for Covid-19 every week throughout the semester. If they test positive, students will be notified immediately and classes will be moved to remote mode or there will be an in-person substitute until the instructor tests negative. Please keep your classmates safe and healthy by not attending class ill (with Covid-19, a cold, or otherwise). Wearing masks in class would be greatly appreciated until further notice. Assignment and assessment arrangements for long-term, symptomatic illness will be accommodated.

Disability Accommodation: Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Students should also contact Disability Resource Center (DRC) at `adarice@rice.edu` or 713-348-5841 to obtain a Letter of Accommodation to present to me and to learn about further resources: `https://drc.rice.edu/`.

Statement on Collegiality, Respect, and Sensitivity: The Department of Mathematics supports an inclusive learning environment where diversity and individual differences are understood, respected, and recognized as a source of strength. Racism, discrimination, harassment, and bullying will not be tolerated. We expect all participants in mathematics courses (students and faculty alike) to treat each other with courtesy and respect, and to adhere to the mathematics department standards of collegiality, respect, and sensitivity (`https://mathweb.rice.edu/department-statement-collegiality-respect-and-sensitivity`) as well as the Rice Student Code of Conduct. If you think you have experienced or witnessed unprofessional or antagonistic behavior, then the matter should be brought to the attention of the instructor and/or

department chair. The Ombudsperson is also available as an intermediate, informal option, and contacting them will not necessarily trigger a formal inquiry.

Title IX Responsible Employee Notification Rice University cares about your wellbeing and safety. Rice encourages any student who has experienced an incident of harassment, pregnancy discrimination or gender discrimination or relationship, sexual, or other forms interpersonal violence to seek support through The SAFE Office. Students should be aware when seeking support on campus that most employees, including myself, as the instructor/TA, are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. For more information, please visit safe.rice.edu or email titleixsupport@rice.edu.